

## REMARKS

Applicants appreciate the thorough examination of the present application as evidenced by the Action mailed August 27, 2008. Claims 1, 8–11, 13 and 15 are pending in this application. Responsive to the Action, Applicants respectfully request entry of the present amendment and further consideration of this application in view of the amendment above and the remarks below.

### **Support for Claim Amendments:**

The amendments presented above have been made to recite particular features of the inventions so as to expedite the prosecution of the present application to allowance in accordance with the USPTO Patent Business Goals (65 Fed. Reg. 54603, September 8, 2000). These amendments do not represent an acquiescence or agreement with any of the outstanding rejections.

Applicants amend claim 8 herein to incorporate all the elements and recitations of claim 9. The points and issues raised by the Examiner are addressed hereinbelow.

### **Claim Rejections - 35 U.S.C. § 102**

Claims 8, 10, 11 and 15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Takahashi et al. (2000) *J. Mater. Sci.* **10**:2346–2348 (hereinafter, “Takahashi et al.”). It is the assertion of the Examiner that Takahashi et al. disclose a CVD method for preparing a metal sulfide film comprising vaporizing  $\text{FeCl}_3$  and thioacetamide, and reacting the same in a heated film forming section to produce a pyrite  $\text{FeS}_2$  on a substrate, and that the method of Takahashi et al. would have inherently formed a triazine compound within the specified range of growth temperatures.

Applicants amend claim 8 herein to incorporate all the elements and recitations of claim 9. As noted by the Examiner, Takahashi et al. discuss growth temperatures for a CVD method for preparing a metal sulfide film may be 450–550°C (Table 2). As amended herein, claim 8 now recites that the step of reacting is performed in the film forming section heated to from 375°C to 425°C. By the admission of the Examiner in the Action, Takahashi et al. do not teach a CVD

method for preparing a metal sulfide film wherein the growth temperature is between 375°C to 425°C. In view of the foregoing, Applicants submit that the instant claims as amended herein are not anticipated by the disclosures of Takahashi et al., and as such respectfully request that the instant rejection be withdrawn.

### **Claim Rejections - 35 U.S.C. § 103**

Claims 1, 9 and 13 stand rejected under 35 U.S. C. § 103(a) as being unpatentable over Takahashi et al. in view of the abstract of Schleich and Chang (1991) *J. Cryst. Growth* **112**:737–744 (hereinafter, “Schleich and Chang”). The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to vary the growth temperature in the method of Takahashi et al. as suggested by Schleich and Chang in order to deposit various phases of FES<sub>2</sub> film. Applicants respectfully traverse this rejection.

As stated in the recently published Examination Guidelines for Determining Obviousness, “the Supreme Court reaffirmed the familiar framework for determining obviousness as set forth in *Graham v. John Deere Co.*...” (Examination Guidelines for Determining Obviousness Under 35 U.S.C § 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.* Federal Register Vol. 72, No. 195, 57526-57535, 57526). Hence, and as long established under that framework, to establish a *prima facie* case of obviousness, three requirements must be satisfied (M.P.E.P. § 2143). First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992); *In re Fine*, 837 F.2d at 1074; *In re Skinner*, 2 U.S.P.Q.2d 1788, 1790 (Bd. Pat. App. & Int. 1986). Second, the proposed modification or combination of the prior art must have a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *See Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991). Third, the prior art reference or combination of references must teach or suggest all of the limitations of the claims. *See In re Wilson* 424 F.2d 1382, 1385, 165

U.S.P.Q. 494, 496 (CCPA 1970) (“All words in a claim must be considered in judging the patentability of that claim against the prior art”).

As discussed above, the prior art reference or references when combined must teach or suggest *all* the recitations of the claims, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. M.P.E.P. § 2143. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. M.P.E.P. § 2143.01, citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). As emphasized by the Court of Appeals for the Federal Circuit, to support combining references, evidence of a suggestion, teaching, or motivation to combine must be clear and particular, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of references. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). In an even more recent decision, the Court of Appeals for the Federal Circuit has stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000).

Takahashi et al. discuss a vapor-phase deposition method for preparing thin films of iron pyrite performed at atmospheric pressure using  $\text{FeCl}_3$  and  $\text{CH}_3\text{CSNH}_2$  as source materials at temperatures between 450 and 550°C. As noted above, Takahashi et al. do not teach a method wherein the growth temperature is between 375°C to 425°C.

Schleich and Chang discuss methods for preparing thin films of iron pyrite and iron marcasite performed a low pressure reacting  $\text{Fe}(\text{CO})_5$  with  $\text{H}_2\text{S}$  as a sulfurizing agent over a wide range of temperatures. At very low temperatures (200°C) pure marcasite was obtained, whereas at temperatures above 480°C pure pyrite is obtained (Conclusion, p. 743). The Examiner relies on the disclosures of Schleich and Chang, related to low pressure CVD, for the instantly claimed growth temperatures. However, the instantly claimed method is related to CVD at atmospheric pressure.

Attorney Docket No. 5576-177  
In re: Takahashi et al.  
Application No.: 10/525,443  
Filed: February 24, 2005

Applicants thus submit that the disclosures of Takahashi et al. and Schleich and Chang, alone or in combination, not only do not describe the method of the instantly claimed invention, related to CVD at atmospheric pressure between 375–425°C, there is no teaching, suggestion or motivation to combine the temperature ranges in the disclosures of Schleich and Chang, related to low pressure CVD, with the disclosures of Takahashi et al., which are related to atmospheric pressure CVD. In view of the foregoing, Applicants submit that the instantly claimed invention is not obvious over the cited prior art, and respectfully request that the instant rejection be withdrawn.

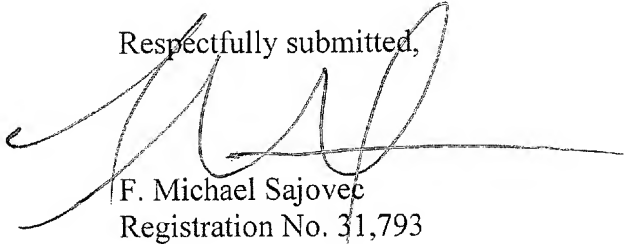
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### CONCLUSION

Accordingly, Applicants submit that the present application is in condition for allowance and the same is earnestly solicited. Should the Examiner have any small matters outstanding of resolution, he is encouraged to telephone the undersigned at 919-854-1400 for expeditious handling.

A petition for extension of time is required with the filing of this paper. Said petition is filed concurrently herewith. Please charge Deposit Account No. 50-0220 in the amount of \$130.00 for a one month extension of time. This amount is believed to be correct. However, the Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-0220.

Respectfully submitted,



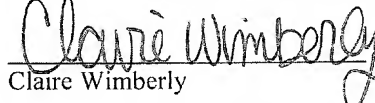
F. Michael Sajovec  
Registration No. 31,793

**Customer Number 20792**

Myers Bigel Sibley & Sajovec, P.A.  
P.O. Box 37428  
Raleigh, NC 27627  
Phone: 919-854-1400  
Fax: 919-854-1401

**CERTIFICATION OF ELECTRONIC TRANSMISSION**

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4) to the U.S. Patent and Trademark Office on December 2, 2008.



Claire Wimberly